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Media violence and subsequent behavior: A test of competing theories

by

Charles William Mueller

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Graduate Faculty in Partial Fulfillment of
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INTRODUCTION

Within the last few years there has been a good deal of psychological research concerned with the effects of media presentations on human behavior (cf. Comstock & Fisher, 1975). A large portion of these studies is concerned with the effects of media violence on subsequent aggressive behavior. Generally the research programs conducted to date can be broken down into two major categories. On the one hand numerous researchers have investigated the effects of violent presentations on young viewers. These investigations attempt to delineate how children learn aggressive behavior, remember learned responses, and decide to emit those learned responses (see Bandura, 1973, for a summary of this research). The second major classification of ongoing research in the area is concerned with the relationship between media violence and adult behavior. More specifically, this latter area of research investigates the immediate behavioral aftereffects of observing violent presentations. Nearly all of the laboratory research in this area utilizes similar procedures. The typical design consists of three stages. The subject is either angered or not angered by the experimenter (or a confederate of the experimenter) and then shown either a violent or nonviolent film clip. These presentations are usually quite short in nature, ranging from three to seven minutes. In the last stage the subject is given the opportunity to aggress against the original instigator. The remainder of this manuscript is concerned with the results of such investigations and with the theoretical formulations developed to account for these results.

First, three theoretical formulations and their relevant research is examined. Then a modification to one of these formulations is proposed and, once again, pertinent evidence reviewed. Finally a study is designed and performed that compares the predictions that can be derived from each of the four theoretical positions.

THEORETICAL FORMULATIONS

In the past there have been three major theoretical explanations that attempt to account for the effects of media violence on subsequent aggressive behavior. One theory predicts a reduction in aggressive behavior following the presentation of a violent stimulus. The other two theories predict just the opposite effect. While both of these theories predict an increment in aggressive behavior following a violent presentation, each theory's explanatory mechanism is quite different. A closer look at each of these three theories will illustrate their similarities and differences.

Catharsis

Background One early theoretical formulation pertinent to the effects of media violence on subsequent aggression has been proposed by Feshbach (1961). According to this catharsis hypothesis, media violence will reduce subsequent aggression by lowering the aggressive drive in the viewer. Based on a hydraulic model of aggressive drives, this formulation states that once the drive is initiated it must be released in some manner. One direct way to release this energy is to aggress against the instigator of the drive. Of more importance to this paper the drive can also be released through, what Feshbach (1961) calls, fantasy aggression. Watching a violent presentation facilitates this fantasy aggression which in turn drains off some, or all, of the aggressive drive, thereby reducing subsequent aggression.

Evidence In order to test this proposition, Feshbach (1961) had subjects treated in either a neutral or abusive manner by the experimenter. After watching either a violent or neutral film, subjects responded to a

two-part self-report questionnaire. In the first part subjects evaluated the experimenter and in the second part wrote out free associations to a set of verbs determined previously to be high in aggressive themes. As the catharsis hypothesis predicts, angered subjects shown the violent film were less aggressive than similarly angered subjects shown the neutral film on both measures of aggression. The type of film had no effect in non-angered subjects. Feshbach concluded that subjects who had an aggressive drive instigated but saw a violent film were able to experience "hostility catharsis" and were therefore less aggressive than those not given the opportunity to release their aggression through media aided fantasy.

The above investigation is the only laboratory study which found a reduction in aggression following the observation of a violent film. For this reason previous reviewers have tended to scrutinize the results quite thoroughly. Bandura (1965) states that these results were merely indicative of a "pseudo-catharsis." It is argued that the aggressive drive was reduced not via fantasy aggression but through a shift in the observer's attention. Bandura suggests that the violent film was more interesting and, therefore, more distracting than the control film. This distraction served to lessen the aggressive drive and the subsequent aggressive responses. Others (Liebert, Sobol, & Davidson, 1971) have questioned whether the use of questionnaires and free associations as measures of aggression was appropriate since Feshbach's catharsis position speaks to the reduction of <u>direct</u> aggression. Finally Berkowitz and Rawlings (1963) suggest that observing aggression that appears unjustified might elicit feelings that are incompatible with an aggressive response. Such feelings,

such as guilt or sympathy, diminish the anger and therefore the aggressive response.

Moving to a second study, Feshbach and Singer (1971) found additional support for the catharsis hypothesis this time in a field setting. Juvenile delinquents were either allowed or not allowed to watch violent television programs for six weeks. The results indicated that the young men allowed to watch the violent programs displayed significantly less acted out aggression than those who did not view any violence on television. This study however has been criticized on a number of dimensions. Regardless of the select population of subjects there is an obvious confound in this study. As pointed out by Liebert, Sobol, and Davidson (1971), by not allowing some subjects to view their normal programs (at least not the violent ones) the manipulation could easily have angered or frustrated these subjects. If this was the case it is no surprise that they later displayed more aggression.

Taken singularly each of the criticisms leveled at the Feshbach studies is not seen as compelling to this author. Taken together they are only slightly more compelling. What is troublesome to this author is the fact that neither study has been replicated or supported by any other research concerning media violence.[1] In fact, nearly all of the remaining investigations have found effects incompatible with the catharsis explanation for the effects of media violence on subsequent aggression. Currently

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[1]This is not a denunciation of all catharsis research and theorizing. Other forms of catharsis, unrelated to media violence, do in fact operate (see Feshback & Singer, 1971, for a review of this work).

there are two major theoretical viewpoints that attempt to account for these other results.

Impulsive aggression

Background In a long series of papers, Berkowitz has outlined one of these theoretical positions. Originally Berkowitz (1962, 1965) felt that there were two distinct components that worked together to produce the facilitative effect of media violence on aggression. One component was considered as primers to aggress. These primers ready an individual to emit an aggressive response. In the typical lab situation there are two inputs that contribute to this readiness. First any anger instilled in the subject increases his or her readiness to aggress. Second any observations of aggression also contributes to this readiness. These primers alone, however, are not sufficient to elicit overt aggression. Another necessary component, elicitors, must be present. The most common elicitor of an aggressive response is an aggressively toned target. If the target contains aggressive cue properties and the subject is ready to aggress, overt aggression will be the result. If either the primers or elicitors are missing, there will be no direct aggression.

More recently Berkowitz (1970) re-examined his theoretical formulation and made some major changes. In the new as well as the old formulation, observed aggression is seen as an activator of previously learned aggressive habits. In the new formulation such observational experiences are seen not only as primers of aggressive action but also as independent elicitors of aggression. The new formulation no longer sees aggressively toned target cues as necessary for an aggressive response to be emitted. Now the

three contributors, anger arousal, observation of aggression, and aggressively toned target cues, are seen as capable of eliciting an aggressive response independent of each other. Through past experiences each component contains common aggressive meaning. This aggressive meaning is the basis for generalization such that aggressive responses learned in one situation may be elicited in a different situation. Looking specifically at the observational experience, aggressive presentations are assumed to elicit aggressive responses by virtue of their similarity with aggressive situations where such responses previously occurred. Similarly the aggressively toned target and the anger arousal elicit this aggressive meaning, thereby activating the aggressive habit.

The importance of this change can be readily visualized by re-examining the typical laboratory situation. As stated previously most laboratory studies have used a three-stage experimental design. Subjects interact with an instigator, watch a film, and then aggress against the instigator. Berkowitz's earlier position clearly states that the target of aggression must have some form of aggression eliciting properties if the violent film is to have a facilitative effect. In his later formulation, Berkowitz no longer feels that anger instigation is necessary. Nonangered subjects, if shown a violent film that contains sufficient aggressive meaning, will display aggressive behavior. In effect the later formulation can account for a larger proportion of research than the earlier one.

Evidence For example, Walters and his colleagues (Walters & Thomas, 1963; Walters, Thomas, & Acker, 1962) set out to investigate the effects of observed violence on aggression. They exposed adolescents and hospital attendants to either a violent or nonviolent film clip. Measures

of both verbal and physical aggression directed at a neutral confederate were then taken. The subjects exposed to the violent film displayed more verbal and physical aggression than those shown the neutral film.

Similar results were found by Hartmann (1969). Adolescent delinquent boys were either insulted or treated in a neutral manner by a confederate of the experimenter. They were then exposed to either a violent or nonviolent film and finally given a chance to differentially shock the confederate for errors ostensibly made on a learning task. The results indicate that regardless of initial instigation, subjects shown the violent film were more aggressive than those shown the control film.

Geen and Berkowitz (1967) also found such a facilitative effect but only under certain conditions. In this study, using college students, subjects were treated in one of three ways. Subjects were either insulted, frustrated, or treated neutrally by a confederate. Subjects then watched either a boxing match (aggressive film) or a track race (nonviolent film). Finally subjects were allowed to aggress against the confederate. The results indicate a facilitative effect of observed violence on subsequent aggression only in insulted and frustrated subjects. No such effect was found for neutrally treated subjects.

These contrasting studies get right at the crux of the question between the 1965 and 1970 versions of the Berkowitz formulation. The earlier formulation predicts only the Geen and Berkowitz results and must turn to other explanations for the first two studies. This, however, is not hard to accomplish since both of these studies used populations that might easily be affected differently by aggressive presentations than a more heterogeneous group. Nevertheless the more recent position need not

turn to supplementary explanations. This version simply states that the violent films in the Walters studies and Hartmann study contained sufficient aggressive meaning to instigate the aggressive habit without the aid of anger instigation or aggressively toned target cues.

Another group of studies by Berkowitz and his colleages supply further evidence for the facilitative effects of media violence on subsequent aggression. Berkowitz and Rawlings (1963) postulate that Feshbach's (1961) results may have been due to the arousal of "aggression anxiety" by the violent film itself. They suggest that this anxiety will not be evoked if the observed violence is seen as justified. In order to test this assumption, subjects were first insulted or treated neutrally by the experimenter. Prior to film exposure half of the subjects were told the protagonist in the film deserved the beating he was about to receive. The other half of the subjects were told the beating was unjust. After viewing the film, all subjects responded to a questionnaire about their attitude toward the experimenter. The justification manipulation had no effect on noninsulted subjects. However, insulted subjects shown the justified violence were subsequently more aggressive than those shown the unjustified violence.

Berkowitz, Corwin, and Heironimus (1962) replicated the above study with the addition of neutral film conditions. Again the films had no effect on neutrally treated subjects. For insulted subjects the observation of justified violence facilitated aggression more than the observation of unjustified aggression which in turn lead to more aggression than observation of the neutral film.

Berkowitz (1964) conducted much the same study. This time, however, the manipulation of instigation consisted of the standard confederate

provocation and the measure of aggression consisted of shocks later delivered to the confederate. Again a facilitative effect for the observation of justified violence on subsequent aggression was found only in insulted subjects.

Berkowitz's 1970 formulation can again account for the above results. The facilitation in aggression by a violent presentation is assumed to come about via generalization of the common characteristics of the observed and actual aggression. Recent research has shown that subjects feel that their aggression in the typical lab situation is justified (Tedeschi, 1974). It can therefore be deduced that there is greater similarity and more generalization to the actual situation when the observed aggression is seen as justified.

One last group of studies further elucidates the applicability of the Berkowitz formulations. As stated previously, one of the three contributors to overt aggression is the aggressive cue value associated with the target. The theory predicts that as this value increases so does the likelihood and/or intensity of subsequent aggression.

Berkowitz (1965a) first demonstrated the power of target cues. In this study subjects were insulted or treated neutrally and then shown a boxing match or a neutral film. Prior to seeing the film half the subjects were told the confederate (instigator) was a boxer while the other half were told the confederate was a speech major. After viewing the film, subjects were given an opportunity to shock the confederate. The results indicated that the greatest number of shocks was delivered by insulted subjects shown the violent film who believed the confederate was a boxer. Even noninsulted subjects delivered more shocks to the "boxer" than to the "speech major."

Berkowitz and Geen (1966) used a different approach to assign aggressive cues to the target. Subjects were insulted or not insulted and were then shown the violent or nonviolent film. At different times throughout the session the experimenter addressed the confederate by name. Half of the subjects were lead to believe the confederate had the same first name as the actor who received the beating in the violent film. The other half of the subjects was lead to believe the names were different. The highest level of post-observational aggression was delivered by insulted subjects shown the violent film who believed the confederate's name was the same as that of the victim in the film. Geen and Berkowitz (1966) replicated this study using different names and found the same results.

Berkowitz and Geen (1967) combined the two different lines of research. Subjects were either insulted or treated neutrally by a confederate. Prior to the presentation of the violent film subjects were told the filmed violence was either justified or unjustified. Half of the subjects from each group were then told that the confederate had the same name as the victim in the film. The remaining subjects were told the confederate had a name different from that of the actor in the film. The results indicated that insulted subjects shown the justified violence, who believed the confederate had the same name as the actor, displayed the most aggression.

Clearly the support for Berkowitz's formulation is extensive. More than ten studies are cited that can be readily accounted for by his 1970 formulation. For this reason Berkowitz's theorizing, with the exception of the catharsis position, went without major challenge until just recently.

It is to this alternative interpretation of the facilitative effects of media violence on aggression that we now turn.

Arousal-excitation transfer

Background The approach of Tannenbaum and Zillmann (1975) departs from that of Berkowitz by focusing on the emotional arousal that media violence can elicit. Based in Hullian theory (1943, 1952) they propose that this emotional arousal will facilitate any behavior that a subject is called upon to perform while a residue of arousal still persists. This basic model suggests that the facilitation of media violence on aggression can be attributed to the level of arousal elicited rather than to the aggressive content of the communication as such. While Tannenbaum (1971) proposed that this general arousal should facilitate aggressive behavior in any individual, a more recent and more involved proposal has been offered. Unlike Berkowitz (1970) Tannenbaum and Zillmann decided it is important that the majority of experimental studies has found that media violence facilitates aggressive behavior only in previously angered subjects. In order to incorporate this finding, Tannenbaum and Zillmann (1975) propose a two-factor, arousal-excitation transfer model.

Borrowing from Schachter's work (Schachter, 1964, 1970; Schachter & Singer, 1962) concerning emotional arousal and its cognitive labeling, Tannenbaum and Zillmann propose a similar model to account for the effects of media violence. According to Tannenbaum and Zillmann, the provoked subject is capable of cognitively labeling his/her arousal toward the confederate as anger. In the second stage of the typical laboratory experiment, the subject is exposed to and aroused by the violent communication. Then

in the third stage, when the confederate reappears, the anger evoked in the first stage is cognitively reinstated. Any residual arousal from exposure to the film is then labeled (or misattributed as) anger and is directed toward the confederate. As a consequence of this arousal-excitation transfer the called for aggressive behavior is elevated. This two-factor theory accounts for the absence of the facilitative effect in nonangered subjects that the general arousal model could not explain. That is to say, a nonangered subject feels no anger toward the confederate. The subject's arousal level is then properly attributed to the effects of the communication and has no effect on subsequent behavior.

Tannenbaum and Zillmann go on to point out that the facilitative effects of arousal should not be limited to aggressive behavior. If the initial encounter between the subject and the confederate is positive (friendly), the subject will then label his/her arousal toward the confederate as affection.[2] It was proposed that this affection leads to a prosocial dominant response in the same way anger leads to an antisocial (aggressive) response. When such a subject is further aroused by other means, such as an arousing film, this prosocial dominant response is elevated.

Evidence The evidence for the arousal-excitation transfer model can be broken down into two major categories, antisocial and prosocial behavior.

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[2]Tannenbaum and Zillmann (1975) never labeled the emotion that is supposedly elicited by the positive encounter but clearly intended it to be viewed as some sort of positive, warm feelings. The use of the term "affection" in the present paper is merely for convenience.

Antisocial behavior When looking at the effects of media violence on aggression, support is found for both Berkowitz's and Tannenbaum and Zillmann's theoretical models. As stated previously, results consistently show the facilitative effect of media violence on aggression in previously angered subjects. Since both theories predict the same such relationship, this method of research will not be able to differentiate each of the theories' applicability. Tannenbaum and Zillmann, however, predict and go on to demonstrate that any arousing communication will facilitate subsequent aggressive behavior in angered subjects. Berkowitz's theoretical viewpoint, based on the content of the communication, predicts no such facilitative effects.

One obvious arousal producing communication is, of course, erotic stimuli. Zillmann (1971) contrasted a highly arousing but nonaggressive erotic film with a less arousing aggressive one. Angered subjects shown the erotic film were significantly more aggressive than those shown the violent film. A catharsis interpretation can be ruled out because a third group shown a nonarousing, nonaggressive film was less aggressive than either of the other conditions.

Donnerstein, Donnerstein, and Evans (1975) presented neutral, mild, and highly erotic pictures to either angered or nonangered subjects. Like Zillmann (1971), no effect was found for nonangered subjects. More importantly, highly arousing/erotic pictures led to significantly more aggression than the less arousing/erotic pictures in angered subjects. While this study and the one reported by Zillmann (1971) tend to support Tannenbaum and Zillmann's formulations over those of Berkowitz, it has been argued that erotic stimuli contain either explicit or implicit aggressive

connotations (Freud, 1933). If, in fact, this is the case, then Berkowitz's aggressive cue model can still account for the data.

Further evidence, however, lends more support to the arousal interpretation. Tannenbaum (1971) showed angered or not angered subjects either a violent, humorous, or neutral film. Angered subjects shown the nonhostile humorous film were more aggressive than those shown the neutral film but less aggressive than those shown the violent film. Since there were no measures of arousal, it is unclear whether the greater aggression following the violent film compared to the humorous film was due to its content or to its greater arousal properties. Of interest, however, and in conflict with Berkowitz's notion is that the arousing humor did in fact produce more aggression than the nonarousing neutral film.

Mueller and Donnerstein (in press) also investigated the effects of humor on aggression. Subjects were either angered or nonangered by a confederate and then were presented with either a nonhumorous, mildly humorous, or highly humorous tape recording. The results indicated that the highly arousing humor produced significantly more aggressive behavior than did the less arousing humor in angered female subjects.

While the stated evidence overall tends to support Tannenbaum and Zillmann's formulation, some related research adds even greater support. Zillmann, Katcher, and Milavsky (1972) substituted physical exercise in place of a media presentation and found once again that the highly aroused angry subjects were more aggressive than the nonaroused ones. Along the same lines O'Neal and Kaufman (1972) found similar results by inducing different degrees of arousal through the use of drugs.

Prosocial behavior Two studies to date test the theory's applicability for prosocial behavior. Tannenbaum (1971) reported a study in which subjects were either treated in a positive, negative, or neutral manner by the confederate in the initial encounter. Subjects then viewed either a highly arousing (erotic) film or a nonarousing neutral film. In the third stage instead of aggressing against the confederate the subjects were given a chance to differentially reward the confederate. The results indicated that the arousing film facilitated rewarding behavior following the friendly encounter but not following the hostile or neutral encounter.

In a more recent study conducted by Mueller, Nelson, and Donnerstein (Note 1), subjects were either angered, praised, or treated in a neutral manner by the experimenter. Subjects then watched either an aggressive, exciting, or neutral film and were then given the opportunity to help the experimenter. The results indicated that regardless of instigation the subjects shown the aggressive film were more willing to help the experimenter make phone calls to solicit blood donors than subjects who watched the exciting or neutral films. While these results don't support the arousal-excitation transfer model, the authors point out that the prosocial behavior asked of the subjects (making phone calls) might not have been cognitively linked to the instigating experimenter. If in fact the behavior was not directed at the instigator, then the model proposed is not actually applicable.

In summary it appears that Tannenbaum and Zillmann's position can account for data that Berkowitz's formulations cannot encompass. However, it should also be pointed out that Tannenbaum and Zillmann (1975) never attempt to account for the research about justified and target linked

aggression reviewed earlier. It would seem, then, that neither theory is capable of accounting for all of the data. The following proposal is an attempt to incorporate an additional concept into Tannenbaum and Zillmann's formulation that enables one to account for the majority of results generated by the Berkowitz and the Tannenbaum and Zillmann studies.

Arousal-attentional shift

Background Bandura (1965) suggests that aggressive films, and for that matter any communication, can have an inhibiting effect on subsequent aggression in angered subjects. It is assumed that any absorbing activity can shift an individual's attention away from prior instigation and, subsequently, aggressive responding. Zillmann and Johnson (1973) go on to state that films have both arousing and attentional shift properties and that this attentional shift is a function of how involving and interesting the communication is to the subject. Mueller and Donnerstein (in press) propose a refined attentional shift formulation in which the specific content of the communication, rather than simply its amount of interest, is considered. They state that the degree of attentional shift also depends on both the affective state of the individual and the specific content of the communication. Specifically, if the content of the communication is closely associated with the cognitive/emotional set of the individual, as are violent films following anger instigation, the attentional shift is minimal. If the content of the communication is incongruent with the subject's affective state, as are humorous stimuli following anger instigation, the attentional shift component is likely to be quite large. If, however, the original interaction between the subject and confederate is of

a positive nature a violent film produces greater attentional shift then a humorous one.

Evidence By incorporating the foregoing attentional shift formulation into the arousal explanation used by Tannenbaum and Zillmann, research not previously mentioned, and the more intricate aspects of those that were, can now be explained. Again the pertinent evidence is divided into two categories, antisocial and prosocial behavior.

Antisocial behavior Media violence, as stated earlier, has a strong arousal component to it. Furthermore, for angered subjects there is relatively little attentional shift and therefore subsequent aggression is maximized. One study, however, has been performed that attests to the applicability of the proposed arousal-attentional shift model. Donnerstein, Donnerstein, and Barrett (1976) angered subjects prior to film exposure, after film exposure, or not at all. Subjects then viewed either an aggressive and presumably arousing film, a neutral film, or no film at all. By manipulating the sequence of film exposure and anger instigation, the authors were able to separate out the effects of the film due to arousal and those due to attentional shift. More specifically, if the film was viewed prior to the instigation, the residual arousal would be present but the attentional shift would be eliminated. As predicted the subjects shown the aggressive film and then angered were more aggressive than those angered and then shown the aggressive film.

There are three pertinent studies concerned with the effects of erotic stimuli which address the above formulation. Zillmann (1971) found that highly erotic stimuli produced more aggression than the less arousing aggressive stimuli. Since both the arousal component and the hypothesized

attentional shift component was greater in the erotic film, the results are hard to interpret. However, for the results to conform to the proposed model, it must be assumed that the arousal was significantly more effective than the attentional shift component.

Baron (1974) presented neutral or erotic pictures to either angered or nonangered subjects. While no effects between pictures were obtained for the nonangered subjects, erotic pictures produced a reduction in aggression in angered subjects. At first glance these results seem in conflict with those of Zillmann (1971). It should be noted, however, that while Zillmann used an erotic motion picture specifically made for the purposes of the study, Baron used still pictures taken from Playboy magazine. It could easily be the case that Zillmann's erotic stimuli were highly arousing and that Baron's were not. As noted by Zuckerman (1971), in his review for the Commission on Obscenity and Pornography, much of the erotic stimuli used by researchers, specifically referring to Playboy pictures, have become "quite humdrum." Research by Corman (note 2) has further indicated that films are more sexually arousing on the average than pictorial stimuli. If, in fact, Baron's stimuli had little if any arousal properties, the results can be explained by the proposed arousal-attentional shift model. That is to say the erotic pictures were no more arousing than the neutral pictures. However, the erotic pictures were probably more interesting than the neutral landscape pictures. If, in fact, they were more engrossing, they then contain greater attentional shift thereby leading to a reduction in aggressive behavior in angered subjects.

A more definitive test was carried out by Donnerstein, Donnerstein, and Evans (1975), who separated out the effects of arousal and attentional

shift in much the same way as Donnerstein, Donnerstein, and Barrett (1976) did with aggressive films. Subjects were shown either neutral/nonarousing, mildly erotic/arousing, or highly erotic/arousing pictures and were either not angered, angered prior to, or angered subsequent to exposure to the stimuli. The results showed that subjects angered then shown the arousing film were less aggressive than those angered after viewing the film. Further evidence can be delineated from this study. Overall, angered subjects exposed to mildly erotic/arousing stimuli were less aggressive than similarly angered subjects exposed to the highly erotic/arousing stimuli. Since both sets of stimuli should have approximately equal attentional shift properties, these results fit into the proposed model.

Moving to studies using humorous stimuli, the arousal-attentional shift model gains further support. Landy and Mettee (1969) found that a combination of both aggressive and nonaggressive cartoons supressed negative ratings about a prior instigator. Landy and Mettee preferred to explain the reduction in aggression following cartoon presentation as a product of catharsis but admittedly pointed out that their results might as well be explained via a distraction (or attentional shift) explanation. This latter explanation gains support since the subjects in the study did not report any aggressive theme in the humor nor did they prefer one type of humor to the other.

Berkowitz (1970) separated out the aggressive and nonaggressive content of the stimuli and found that subjects exposed to aggressive humor (Don Rickles) were more aggressive towards a job applicant than subjects exposed to nonaggressive humor (George Carlin) regardless of whether they were previously angered by the job applicant. Berkowitz points out that

both his aggressive and nonaggressive humor were reported equally funny (or that the nonaggressive humor was in fact funnier and more intelligent). Also, the arousal-attentional shift model states that aggressive content should be less incongruous to the cognitive/emotional setting in angered subjects than the nonaggressive content. It can therefore be assumed that the nonaggressive humor had greater attentional shift properties when compared to the aggressive humor. Furthermore, Doob and Climie (1972) and Zillmann (1971) have demonstrated that aggressive stimulus exposure has added arousal producing properties. Assuming that Berkowitz's aggressive humor contained similar arousal properties, while the neutral humor did not, it is evident that the facilitative effects can be accounted for by the different arousal and/or attentional shift properties of the humor tapes. The fact that nonangered subjects were also more aggressive following the aggressive humor than following the nonaggressive humor has been interpreted by Leak (1974) to indicate that the aggressive humor (Don Rickles) might have inherently angered the subjects so that in fact they were no longer nonangered subjects. It might be noted anecdotally that Berkowitz (1970) need not refer to such a supplementary explanation. He no longer feels anger instigation is a necessary condition for film aided facilitation of aggression. The Tannenbaum and Zillmann formulation, as well as the Mueller and Donnerstein one, does require some such explanation.

In a study by Baron and Ball (1974), subjects were either angered or not angered and then exposed to either humorous cartoons or nonhumorous pictures. The results indicated that exposure to nonhostile cartoons produced less aggression than the nonhumorous pictures in previously angered

subjects. Once again there is a question as to the amount of arousal in Baron's stimuli. More specifically, cartoons out of "New Yorker" and "Saturday Review" might not be nearly as arousing as the "live" routines used by Berkowitz (1970) or Mueller and Donnerstein (in press). Baron and Ball argue that a distraction explanation is untenable since the subjects did not differentiate the humorous and neutral stimuli on perceived interest. The present formulation, however, doesn't claim that interest alone is indicative of attentional shift. Attentional shift is also a function of the degree the stimuli alters the subject's cognitive/emotional set. Baron and Ball's nonhumorous control stimuli contain a degree of attentional shift away from an aggressive predisposition, but the cartoons, designed to create a mood generally considered incompatible with aggressive behavior, certainly contain more attentional shift for the angered subjects. If neither the humor nor the neutral pictures contain any significant arousal properties, as suggested by Mueller and Donnerstein (in press), the results found are predicted by the arousal-attentional shift model.

Tannenbaum (1971), in a study previously discussed, readily acknowledges that the facilitative effects of his humor stimuli can be accounted for by their arousal properties. While the humor stimuli did not produce as much aggression as the violent stimuli, it can't yet be determined whether this is due to the greater arousal of the violent stimuli, the greater attentional shift of the humorous stimuli, or some combination of both.

Finally Mueller and Donnerstein (in press) either angered or didn't anger subjects and then exposed them to either a mildly arousing humorous, a highly arousing humorous, or a nonarousing nonhumorous tape recording.

The results indicated that, as predicted, angered female subjects were significantly more aggressive following the highly arousing humor than following the less arousing humor. Interestingly, the angered subjects shown the nonarousing neutral tape were as aggressive as those who listened to the highly arousing humor. This was interpreted by the authors as indicative of the attentional shift properties of the humor stimuli. That is to say, the low arousing tape, via its attentional shift properties decreased aggression while the highly arousing tape brought the aggression back up to the control role in angered subjects.

Berkowitz's studies can also be accounted for via an attentional shift explanation. Berkowitz and his colleagues (Berkowitz & Rawlings, 1963; Berkowitz, Corwin, & Heironimus, 1962; Berkowitz, 1964) consistently found that angered subjects who witnessed justified aggression were later more aggressive than those who viewed unjustified aggression. Certainly it can be argued that an angered subject observing justified aggression is less likely to experience a mood alteration than one viewing unjustified aggression. That is to say subjects watching unjustified aggression may very well begin to have feelings of guilt or sympathy which would act to take attention away from their anger toward the instigating confederate. On the other hand, witnessing justified aggression should constantly reiterate the present situation and therefore minimize any attentional shift properties.

Similarly the research investigating aggressive cues linked to the target (Berkowitz, 1965; Geen & Berkowitz, 1966; Berkowitz & Geen, 1966, 1967) can be accounted for by the attentional shift formulation. If a link is made between the target of aggression and the victim of aggression in

the film, surely this would lessen the attentional shift properties of the film.

Prosocial behavior The two studies concerned with the effects of media presentations on prosocial behavior do not address the new formulation. Tannenbaum (1971) clearly confounds the effects of arousal and attentional shift. The facilitative effects of the erotic as compared to the neutral film on rewarding in positively treated subjects are probably due to the increased arousal produced by such films. It is unclear to what extent erotic stimuli shift attention away from a positive setting and is probably subject to wide individual differences (Byrne, Note 3).

Mueller, Nelson, and Donnerstein (Note 1) as pointed out previously, do not address the issue because of the lack of certainty concerning what characteristics of the situation were important in the subject's decision to help.

Overview

It has become increasingly evident that the majority of research to date conflicts with Feshbach's (1961) catharsis formulation. Due to the lack of replication and the criticism leveled at the few studies finding a cathartic effect one tends to look for other interpretations. One such interpretation is offered by Berkowitz (1965, 1970). Berkowitz feels as Feshbach does, that the content of the presentation affects subsequent behavior. Unlike Feshbach, however, Berkowitz predicts and finds support for a facilitative effect of media violence on subsequent aggression.

Unlike Feshbach or Berkowitz, Tannenbaum and Zillmann (1975) feel that the arousal produced by the film, rather than its content, is the important

factor in affecting subsequent behavior. Tannenbaum and Zillmann predict the same facilitation in aggression following the observation of violence as does Berkowitz. They go on to predict and gather evidence for a facilitation following the observation of nonviolent presentations that Berkowitz does not predict.

Finally Mueller and Donnerstein (in press) attempt to incorporate the importance of both the content and arousal properties of the presentation in order to account for the literature to date. Table 1 enables the reader to see in summary form the similarities and differences between each position.

Table 1. Systematic representation of major positions

Theoretical Formulation	Major Proponent(s)	Importance of Film	Explanatory Mechanism
Catharsis	Feshbach (1961)	content	Fantasy aggression drains off aggressive drive
Impulsive Aggression	Berkowitz (1970)	content	Summation of instigation, observation, and target cues facilitates aggressive response
Arousal-Excitation Transfer	Tannenbaum and Zillmann (1975)	arousal	Misattribution of arousal facilitates dominant response
Arousal-Attentional Shift	Mueller and Donnerstein (in press)	content and arousal	Arousal less attentional shift facilitates dominant response

PRESENT EXPERIMENT

The present investigation is an attempt to directly compare predictions derived from the four theoretical positions. In order to compare these predictions, subjects in the present study were first treated in either a positive, neutral, or negative manner by a confederate of the experimenter. Subjects then viewed either a violent, humorous, or neutral film and were then given an opportunity to display both aggressive and rewarding behavior toward the confederate-instigator. The three films were selected in such a manner so that the violent and humorous films were equally and significantly more arousing than the nonarousing control film.

Such a design permits direct comparisons between the competing viewpoints in a rather straight-forward manner. The two noncontrol films are both equal in arousal yet different in content. Any formulation that implicates the contextual properties of the stimulus as the determinant of later behavior must predict different results for these two film conditions. On the other hand, a theory which points to the importance of arousal properties predicts no such difference between the humorous and aggressive films. However, such a theory does predict a difference between subjects shown either of these two films and those shown the nonarousing control film. In the following sections predictions deduced from each of the positions are listed for the aggression and reward data.

Predictions for the aggression data

Each theory makes a number of predictions. Some of these predictions are common to most or all of the positions and some are unique. First the

common and then the unique predictions derived from each position are listed.

Common predictions Although the theories are quite diverse, they do share a few common expectations for the present experiment (see Figures 1a, c, e, and g):

1. All four positions predict that negatively treated subjects will display more aggressive behavior than neutrally treated subjects, overall.

2. With the exception of Berkowitz's 1970 formulation, all the positions predict (including Berkowitz, 1965b, incidentally) that film presentation will have no effect on neutrally treated subjects.

It should be noted that none of the formulations make any predictions concerning aggressive behavior in positively treated subjects.

Unique predictions A closer look at each model's predictions will point to each one's distinguishing characteristics.

Catharsis One major and unique prediction for the present investigation emanates out of the catharsis position (see Figure 1a):

1. Negatively treated subjects shown the violent film will display less aggression than similarly treated subjects shown either the humorous or control film.

Impulsive aggression Since Berkowitz has deemed it appropriate to outline his 1970 formulation, predictions stated here will be in reference to this more recent theorizing. While the 1970 version can account for more data than the 1965 version, it is less exacting. It is therefore impossible to make precise predictions. Nevertheless tentative ones can be listed (see Figure 1c):

1. Negatively treated subjects shown the violent film will display more aggressive behavior than similarly treated subjects shown the humorous or control film.

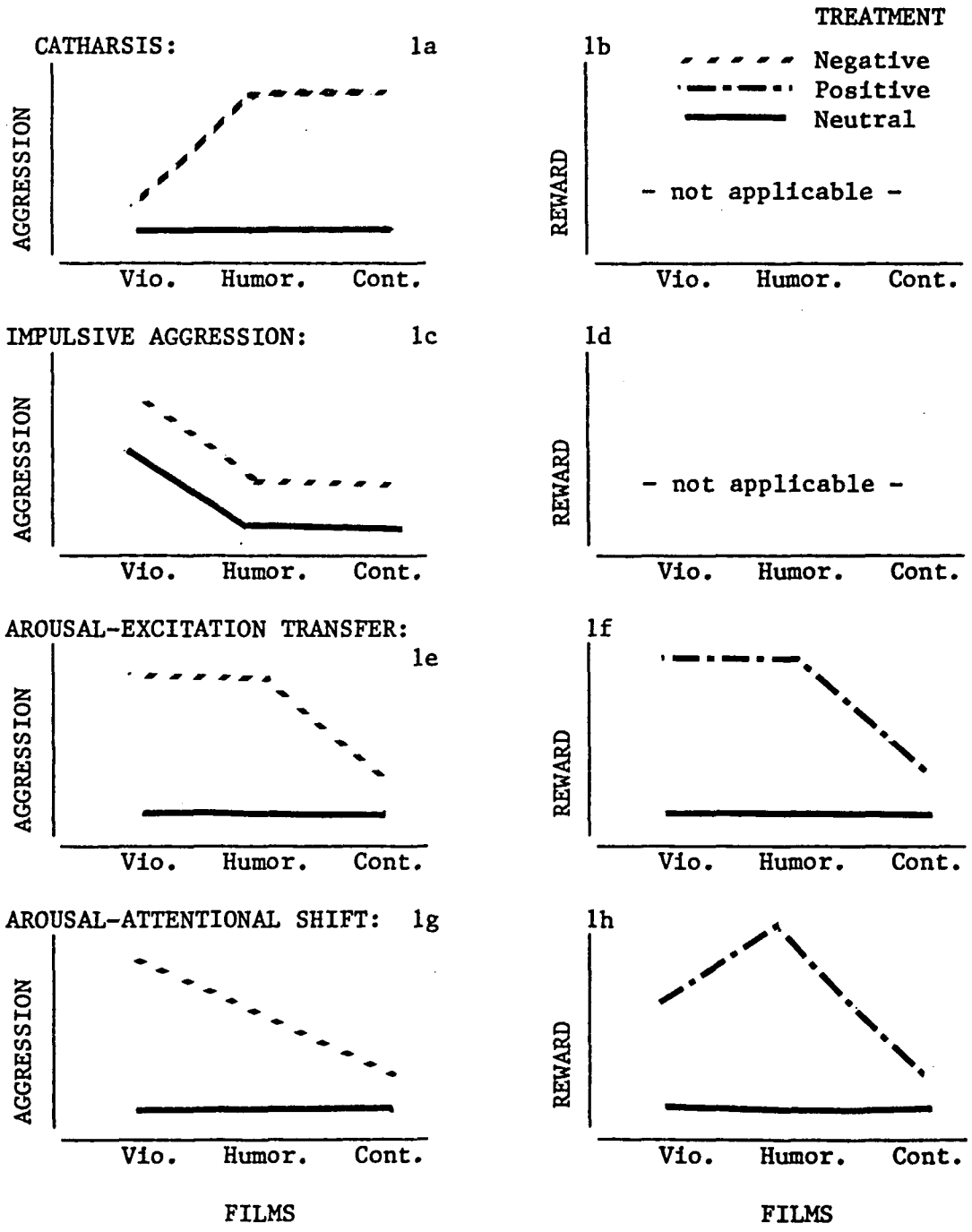

Figure 1. Predictions derived from alternative positions

2. Neutrally treated subjects shown the violent film will also display more aggression than similarly treated subjects shown the humorous or control film.

While the first prediction is on relatively sure ground, the second one is more tenuous. It is reasonable to assume that the violent film will not generate enough aggressive meaning to bring out an overt aggressive response in and of itself. If such is the case Berkowitz (1970) would predict no film effect in neutrally treated subjects.

Arousal-excitation transfer Predictions derived from the arousal-excitation transfer model (Tannenbaum & Zillmann, 1975) are more clear cut (see Figure 1e):

1. Negatively treated subjects shown either of the arousing films will display more aggression than similarly treated subjects shown the nonarousing control film.

2. Negatively treated subjects shown the violent and humorous films will display equal amounts of aggression.

Arousal-attentional shift Two additional predictions can be derived from Mueller and Donnerstein's position (see Figure 1g). The first prediction is identical to that made by the arousal-excitation transfer position:

1. Negatively treated subjects shown either of the arousing films will display more aggression than similarly treated subjects shown the nonarousing control film.

The second prediction, by incorporating the previously discussed attentional-shift formulation, deviates from that derived by Tannenbaum and Zillmann:

2. Negatively treated subjects shown the violent film will display more aggression than similarly treated subjects shown the humorous film.

Predictions for the reward data

Two of the four positions make no predictions for reward behavior. Both the catharsis and the impulsive aggression formulations address themselves exclusively to aggressive behavior (see Figures 1b and 1d).

Common predictions The two remaining positions, arousal-excitation transfer and arousal-attentional shift, share the following predictions (see Figures 1f and 1h):

1. Positively treated subjects will display more reward behavior than neutrally treated subjects, overall.
2. Film presentation will have no effect on neutrally treated subjects.
3. Positively treated subjects shown either of the arousing films will display more reward behavior than similarly treated subjects shown the nonarousing control film.

It should also be noted that neither of the formulations make any predictions concerning reward behavior in negatively treated subjects.

Unique predictions The two theoretical positions differ on their final prediction for the present investigation.

Arousal-excitation transfer Tannenbaum and Zillmann predict (see Figure 1f):

1. Positively treated subjects shown the violent and humorous films will display equal amounts of reward behavior.

Arousal-attentional shift By incorporating the attentional shift hypothesis into the arousal explanation, Mueller and Donnerstein predict (see Figure 1h):

1. Positive treated subjects shown the humorous film will display more reward behavior than the similarly treated subjects shown the violent film.

METHODS

Subjects

The subjects were 81 female students enrolled in the introductory psychology course at Iowa State University. Subjects participated in order to receive extra credit in the course. At some point during the experiment, five of the 81 subjects indicated some suspicion about the true nature of the study. Since no cell of the design contained more than one suspicious subject, these subjects along with one randomly selected subject from each of the remaining four cells were dropped from the analysis.

Apparatus

Both shock and reward were ostensibly administered via two modified Buss "aggression machine" (Buss, 1961). Each apparatus had two rows of eight buttons each. One row, labeled shock, ostensibly ranged in intensity from low to high. The second row, labeled points, similarly ranged from low (1 point) to high (8 points). Subjects were informed that each point administered to the confederate would constitute one extra cent ($.01) that could be earned by the confederate. Two lights in the upper right hand corner of each apparatus were used as indicators of the confederate's correct or incorrect responses.

Selection of films

Nine video-tape films, which were assumed to vary in their arousal and contextual properties, were initially selected by the author. Nineteen female subjects, run in two groups, were shown the nine films and asked to rate each one of them on seven different 10-point scales. Subjects rated

how sexual, aggressive, humorous, arousing, and exciting each film was as well as how amused, insulted, and aroused they felt after viewing the film (see Appendix A). Every subject completed her rating of the prior film before proceeding onto the next film. So as to minimize confounding order effects, the two groups of subjects saw the films in the exact opposite order.

A simple one-way ANOVA with repeated measures was performed on each of the seven measures. Significant main effects for the films were found on the humorous, aggressive, arousing, and aroused measures. No other overall F's were significant. Subsequent Newman-Kuels analyses produced three films that met all the requirements of the proposed design. The humorous film chosen (a skit by stand-up comedian David Brenner) was rated significantly more humorous than either the violent or neutral film (both $p<.01$). The violent film (one round of a boxing match) and the neutral film (panel discussion on economics) were not rated significantly different in their amount of humor. The violent film was rated as significantly more aggressive than either of the other two films (both $p<.01$) which were not rated significantly different. Finally the humorous and violent films, while not significantly different, were both rated as significantly more arousing and producing of more felt arousal than the neutral film (all $p<.01$).

Procedure

Upon arriving for the experiment, the subjects were met by the experimenter who took them into a waiting room. It was explained to all the subjects (two actual subjects and one confederate) that the present experiment was concerned with the effects of stress and distraction on learning and

Table 2. Mean rating for films used in study

RATING	FILM		
	Humorous	Violent	Control
Humorous	8.737	1.631	1.579
Aggressive	2.847	8.632	2.684
Arousing	4.789	4.263	2.421
Aroused	4.316	4.158	2.105

that each subject would be asked to both receive and deliver electric shock. It was further explained that subjects would also have the opportunity to earn money for their performance on some of the tasks in the experiment. At this time the experimenter distributed "informed consent forms" for the subjects to read and sign (see Appendix B).

Subjects were then told that one of them (actually the confederate) would be chosen to go into one room while the other two would be asked to go to a different room. The experimenter then led the confederate out of the waiting room and returned moments later. The real subjects were then led into the experimental room. Subjects were then seated at desks which were separated by a room divider. Similar modified Buss "aggression machines" were situated on each desk.

The subjects were told that they would be first to take a task under stress. Their task consisted of writing a short essay on their opinion "Who would you like to see elected as president and why?" The experimenter

then explained that the stress consisted of three methods of evaluation made by the subject in the other room (i.e. the confederate). The subjects were told that the confederate would choose a low number of shocks for a very good essay (0 or 1) and a high number of shocks for a very poor essay (9 or 10). The confederate would then decide how much money should be given to the subject for her performance. This amount could range from "no amount at all" to a "one dollar maximum." Finally the confederate would fill out a short written evaluation concerning the essay of each subject. In the no instigation conditions there was no mention of any stress/evaluation and later no actual evaluation. Since the instructions for these neutrally treated subjects were different, the experimenter decided before seeing the subjects if the pair would be treated in a neutral manner. If one subject was treated positively, the other one in the pair was treated negatively. If, however, one subject was treated neutrally, then so was the other.

Once given their appropriate instructions, subjects were given approximately four minutes to write their essays. Once this time had elapsed the experimenter returned to the room, collected the essays, and informed the subjects that he would give the essays to the subject in the other room.

Instigation manipulation

The experimenter then left the room, waited a few minutes, returned, and applied the electrodes to one subject. Speaking over the intercom, the experimenter instructed the confederate to administer her shock evaluation to the first subject. The confederate then administered either one or nine shocks and then informed the experimenter that she had completed her

evaluation. The experimenter then removed the electrodes from the subject and applied them to the second subject and the procedure was repeated. For the negatively treated subject, nine shocks of .5 second duration were delivered, clearly indicating a very poor evaluation. For the positively treated subject, one shock was administered, indicating a very good rating. The experimenter then brought in notes indicating the amount of money earned ($.10 for the negatively treated subject, $.90 for the positively treated subject) as well as a written evaluation containing four 5-point scales concerning the confederate's opinion about the subject's essay (good-bad) and its creativity, as well as the subject's intelligence and knowledge of the subject matter. The negatively treated subject received a very poor rating on the four scales while the positively treated subject received a very good rating (see Appendix C). The neutrally treated subjects received no shock, money, or evaluation whatsoever.

Film exposure

Once the subjects read their evaluations, they were told that they would then help the experimenter administer a learning task to the confederate. It was explained to the subjects that the confederate would also be under three types of stress: potential shock for an incorrect answer, potential monetary reward for a correct answer, and an audio-visual distraction while working on the task. The experimenter then explained that he would play a few minutes of the same type of material that was being presented to the confederate while she studied for her task. At this point the subjects watched either the neutral, humorous, or aggressive video tape.

Administration of aggression and reward

After the subjects received shock and their evaluations (or waited a similar amount of time) and viewed one of the three video tapes, they were given the chance to punish and reward the confederate. It was explained that the confederate had been studying a list of nonsense syllables in the other room and would now be tested. The experimenter explained to the subjects that he would signal the beginning of a trial by calling out the appropriate trial number over the intercom. The subjects were told to respond alternately on every trial throughout the session. On each trial one subject was to call out a pre-scheduled three letter syllable and wait for the confederate's response. If the confederate responded correctly, the subject was to push one of the point buttons. If the confederate responded incorrectly, the subject was to push one of the shock buttons. Subjects were told they could administer any level of punishment or reward they felt appropriate since the level chosen would have no effect on the confederate's performance. They were told to keep in mind, however, that both the punishment and reward intensities go from low to high and that the shock intensities of 6, 7, and 8 should be considered quite high. After answering any questions the subjects had, the experimenter left the room and signalled to the first subject to begin the task. There was a total of 48 trials (24 per subject) in which each subject ostensibly administered 12 shock and 12 reward responses.

Questionnaire and debriefing

Following the last trial the experimenter gave each subject a short questionnaire to complete. The questionnaire asked each subject to rate on

5-point scales how she felt her essay was evaluated (good-bad), how she felt after receiving her rating (good-bad and angry-not angry), as well as how interesting, humorous, and aggressive she had found the film (see Appendix D). For the neutrally treated subjects, only the last three measures were included. After completion of the ratings, the subjects were completely debriefed as to the true nature of the experiment, including that there would be no actual monetary payoff. The experimenter then answered any questions the subjects had about the experiment, gave the subjects their course credit for participation, and dismissed them.

Measure of the dependent variables

The dependent variable aggression was operationally defined in terms of the intensity of shock administered to the confederate. However, Buss (1961) has argued that the administration of weak or mild shock levels may be indicative of a motive to help the confederate learn more efficiently rather than to hurt the confederate. In order to minimize the ambiguity about the subject's motives for choosing any given shock intensity, previous researchers have tabulated only the shocks labeled as "very strong" in the subject's aggression score (cf. Epstein, 1966). Other researchers using a similar rationale have used a combination of measures including a pre-defined high shock score (cf. Donnerstein, Donnerstein, Simon, & Ditrichs, 1972; Donnerstein & Donnerstein, 1971, 1972, 1973, 1975).

In this study shocks labeled and specifically pointed as "very strong" were tabulated in the analysis. Twice during the instructions the experimenter stated that shocks 6, 7, and 8 should be considered as "very strong." Furthermore, these three shock buttons were labeled on each

apparatus as "very strong." Following Buss's suggestion (1961), the present study simply tabulated in an additive fashion only the shock intensities of 6, 7, and 8 that were administered by each subject.

This ambiguity about motives is not apparent when examining the dependent variable reward. While reward was also operationally defined in terms of intensity, all levels of reward were summated for the subsequent analysis.

Summary of design

The overall design of the present study was a 3 x 3 factorial with film (violent, humorous, and neutral) and treatment (negative, neutral, and positive) as factors. Eight subjects per cell were used in the analysis.[3] Data concerning manipulation checks and the two dependent variables (aggression and reward) were collected.

Three experimenter-confederate teams were used throughout the experiment. Each team consisted of a male experimenter and a female confederate. While not included as factors in the design, multiple experimenter-confederate teams were employed so as to utilize lab space more efficiently as well as to minimize potential experimenter bias (Rosenthal, 1966). Each team ran from two to four subjects in each of the conditions.

Finally two subjects were run simultaneously so as to utilize both lab and experimenter-confederate time more efficiently.

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[3]Subjects that indicated any form of suspicion prior to the debrief- were eliminated from the analyses.

RESULTS

Manipulation checks

Treatment Only subjects who supposedly had their essays evaluated by the confederate subsequently rated their feelings about the evaluation and the confederate. Therefore, a 2 x 3 ANOVA was performed on the 5-point rating scales taken at the end of the experimental session. Subjects treated in a negative manner reported that their evaluation was rated significantly worse than those treated in a positive fashion ($F_{1,42} = 225.288$, $p<.0001$). When asked to indicate how they felt after the evaluation, the negatively treated subject reported feeling worse ($F_{1,42} = 103.547$, $p<.0001$) and more angry than the positively treated subjects ($\bar{x} = 1.166$, $F_{1,42} = 29.306$, $p<.0001$). No main effects for film presentation nor any interaction effects approached significance.

Films All subjects filled out the ratings about the film they had seen. A 3 x 3 ANOVA performed on the 5-point rating scales taken at the end of the experimental session, indicated that the films were judged significantly different on their amount of interest ($F_{2,63} = 15.824$, $p<.0001$), humor ($F_{2,63} = 89.383$, $p<.0001$), and aggressive content ($F_{2,63} = 43.928$, $p<.0001$). No main effects for the way subjects were treated nor any interaction effects approached significance (all $p>.25$). Subsequent Newman-Keuls analysis on the interest measure indicated that the humorous film was seen as more interesting than the violent ($p<.06$) and the neutral film ($p<.05$). On the humor measure the humorous film was rated as significantly more humorous than either the violent or neutral films (both $p<.01$).

Table 3. Treatment ratings by negatively and positively treated subjects

RATING	TREATMENT	
	Positive	Negative
How was essay rated:		
good - bad	1.333	4.75
How did you feel:		
good - bad	1.458	3.792
angry - not angry	3.844	2.292

Table 4. Film ratings by all subjects

RATING	FILM		
	Humorous	Violent	Control
Interesting	4.208	2.708	2.250
Humorous	4.250	1.625	1.208
Aggressive	2.666	4.583	2.042

Finally on the aggressive rating the violent film was judged as significantly more aggressive than either the humorous or neutral film (both $p<.01$).

Method of analysis

Due to the nature of the experiment and the predictions being tested, the analysis for the two dependent variables was performed in a nontraditional manner.

The traditional approach would have been to perform a 3 x 3 factorial ANOVA on each of the two dependent variables. Such an analysis would allow for a broad examination of the results. However, an analysis of this kind fails to discriminate between comparisons of greater and lesser importance. In order to test the competing predictions outlined earlier, it would be necessary to perform additional comparisons. While this is the route most often taken, in the present investigation it would only serve to weaken the analysis. Furthermore, none of the theories address predictions for positively treated subjects' aggressive behavior or negatively treated subjects' reward behavior. While such results could prove to be interesting, the primary goal of the current investigation is to compare rivalling predictions. Finally, the dual nature of the films' components (arousal and contextual properties) suggests more exacting and meaningful procedures of analysis.

The approach used in the following analyses test all of the predictions stated earlier in an efficient, powerful, and nonredundant fashion. To accomplish this end, "a priori" orthogonal comparisons were designed. This method allows for direct tests of the effects of the films' arousal

and content components independently. As the predictions demand, comparisons for the aggression data are focused on the negatively treated subjects. Similarly comparisons for the reward data focus on the positively treated subjects. A closer look at each of the comparisons and their results will further elucidate this method.[4]

Aggression data

Each subject's aggression score consisted of a simple summation of all 6, 7, and 8 shock intensity responses administered to the confederate. The pattern of aggression scores can be seen in Figure 2.

The first comparison was intended to test the effects of film arousal, independent of content, on subsequent aggression in negatively treated subjects. The means for the negatively treated subjects shown the violent and humorous films were combined and compared to the mean for the negatively treated subjects shown the neutral film. This comparison revealed that negatively treated subjects shown either of the arousing films were more aggressive than those shown the nonarousing control film ($F_{1,63} = 4.554$, $p<.05$). The arousal-excitation transfer and the arousal-attentional shift formulations both predict such an effect (page 30, both #1's). No predictions from either the catharsis or the impulsive aggression formulations are addressed by this comparison.

The second comparison was designed to test for the effects of content properties while holding the arousal properties of the films constant. To this end the mean for the negatively treated subjects shown the violent

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[4] The more traditional analyses using 3 x 3 ANOVA's can be found in Appendix E (for the aggression data) and Appendix F (for the reward data).

film was compared to the mean for the similarly treated subjects shown the humorous film. No significant differences were obtained ($F_{1,63}<1$). Only the arousal-excitation transfer model predicts that these two groups would display no differences (p. 30, #2). Catharsis predicts the violent film would lead to less aggression than the humorous film in negatively treated subjects (p. 29, #1). Both the impulsive aggression position and the arousal-attentional shift position predict that the violent film would lead to greater aggression than the humorous film in negatively treated subjects (p. 30, #1 and #2, respectively).

The third comparison tested for the differences between the overall means for the negatively treated and neutrally treated subjects. All four positions predict that negatively treated subjects would display more aggression than neutrally treated subjects (p. 29, #1). The results support this expectation ($F_{1,63} = 6.4465$, $p<.02$).

To round out the analysis and thereby examine each of the predictions stated earlier, a one-way ANOVA was performed comparing the means for each of the three neutrally treated groups. This analysis found no significant differences between neutrally treated subjects ($F_{2,21}<1$). With the exception of Berkowitz (1970) all the positions predict this absence of differences (p. 29, #2). Berkowitz (1970) can predict this absence or predict that neutrally treated subjects shown the violent film would display more aggression than those shown the humorous film (p. 30, #2). This effect was, of course, not found.

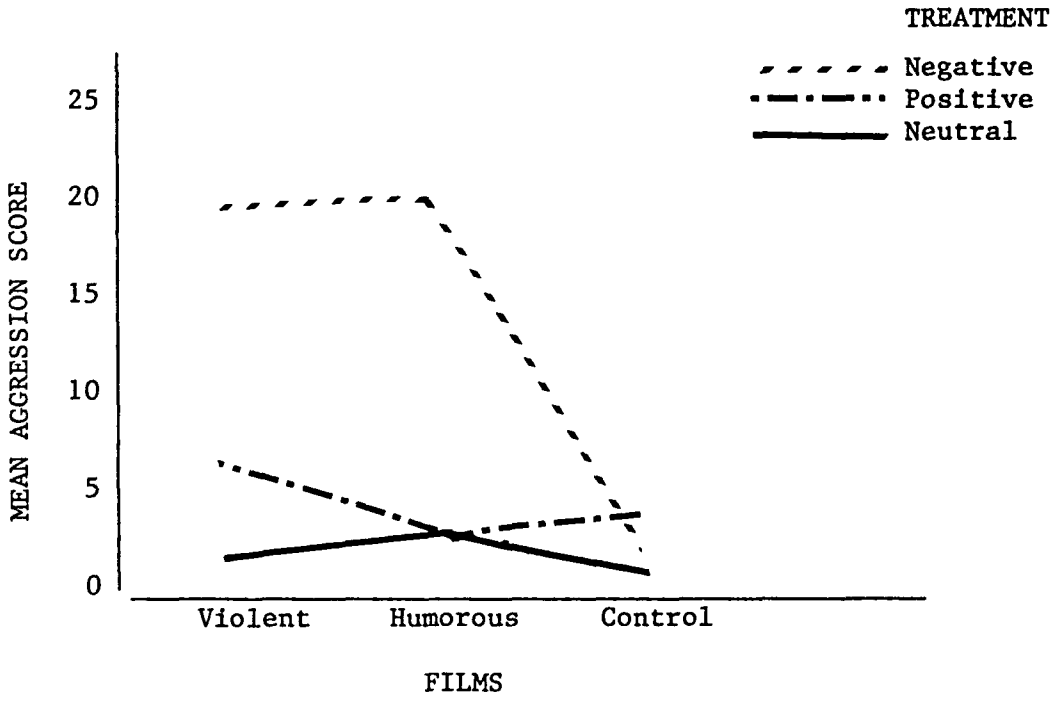

Figure 2. Mean aggression score as a function of treatment and film exposure

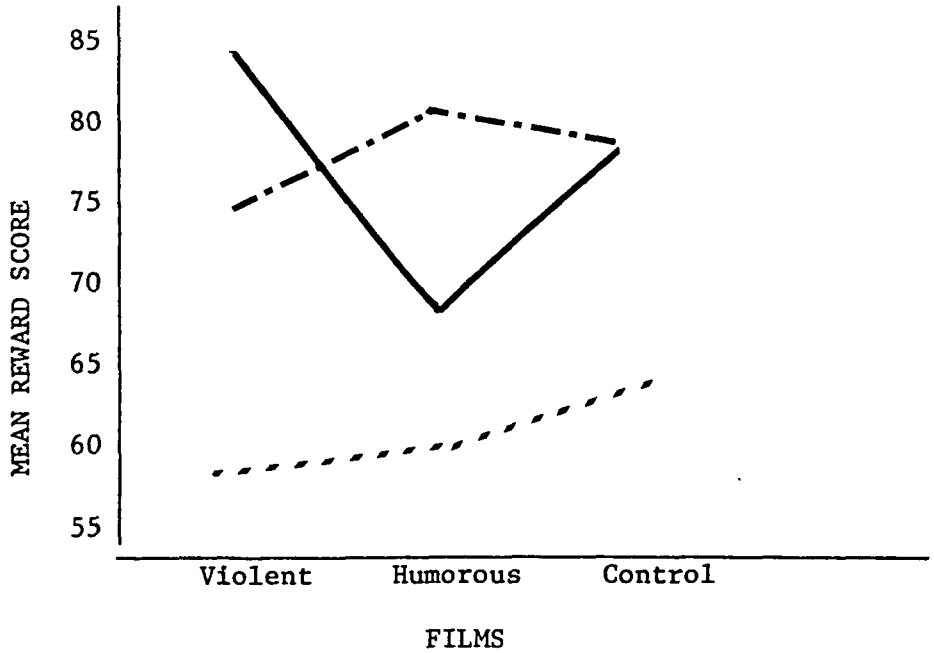

Figure 3. Mean reward score as a function of treatment and film exposure

Reward data

Each subject's reward score is a simple summation of all 12 reward responses administered to the confederate. The pattern of reward scores can be seen in Figure 3. As with the aggression data, it was again felt the orthogonal comparisons allow for the most precise examination of applicable predictions.

The first comparison was design to test the effects of the films' arousal, independent of their content, in positively treated subjects. The means for the positively treated subjects shown the violent and humorous films were combined and compared to the mean for the negatively treated subjects shown the neutral film. Both of the applicable formulations, arousal-excitation transfer and arousal-attentional shift, predict greater reward behavior from the subjects shown either of the arousing films (p. 31, #3). The comparison, however, revealed no significant differences ($F_{1,63}<1$).

The next comparison tested for the effects of the films' content, while holding their arousal constant. The mean for the positively treated subjects shown the humorous film was compared to the mean for similarly treated subjects shown the violent film. The arousal-attentional shift formulation predicts the humorous film would lead to more reward behavior than the violent film in positively treated subjects (p. 31, #1). The arousal-excitation transfer formulation predicts no such effects (p. 31, #1). The results from the comparison revealed no significant differences between the two means ($F_{1,63}<1$).

The final orthogonal contrast compared the overall means for the positively treated and neutrally treated subjects. Both relevant positions

predict greater reward behavior from the positively treated subjects (p. 31, #1). However, once again no significant differences were found ($F_{1,63} = 1.011$, $p > .25$).

To round out the analysis a one-way ANOVA was performed comparing the means for the three neutrally treated groups. Both formulations predict no significant differences (p. 31, #2). This comparison, in fact, revealed no significant differences ($F_{2,21} < 1$).

DISCUSSION

The present experiment was undertaken so as to test predictions deduced from different theoretical viewpoints concerning the effects of media presentations on subsequent behavior. Two forms of behavior were investigated: aggressive and rewarding responses. Subjects were treated in a positive, neutral, or negative manner by a confederate of the experimenter and then watched either an arousing violent film, an arousing humorous film, or a nonarousing control film. After viewing the film, subjects were given the opportunity to differentially reward and punish the confederate for correct and incorrect responses ostensibly given during a nonsense syllable task.

Using "a priori" orthogonal comparisons, the results indicated that the arousing films, regardless of their content, facilitated aggression in negatively treated subjects. Furthermore, negatively treated subjects were significantly more aggressive than the neutrally treated subjects. No significant differences were found between conditions on the reward variable.

All four theoretical positions outlined in this paper predict that negatively treated subjects would display more aggression than neutrally treated subjects. Just such an effect was found. However, unlike many of the studies to date, the design of the present investigation also allowed for divergent predictions for each of the competing positions.

The present results clearly do not support the catharsis hypothesis as proposed by Feshbach (1961). While there may very well be other methods of discharging pent-up aggression, it appears that watching a violent presentation is not one of them.

It is not as easy to discard Berkowitz's (1970) formulations. The present experiment found an aggression facilitated effect in angered subjects shown either the violent or the humorous film. Berkowitz predicts only a facilitative effect following the observation of the violent film. The results then seem to dispute the Berkowitz position. One could, however, argue that the humorous stimuli contained aggressive meaning. If this were the case, Berkowitz would predict a facilitative effect as was found. This line of argument becomes less plausible, however, when one examines the supplementary data. Both the pre-measures and the manipulation checks indicate that subjects did <u>not</u> perceive any more aggressive properties in the humorous film than in the control film. With this reported equality in mind, one would need to predict a similar facilitative effect following observation of the control film, a result that was not found in the present investigation.

Mueller and Donnerstein's (in press) position also fails to receive decisive support. The arousal-attentional shift formulation can readily account for the facilitative effect of the arousal films over the control film. However, it also must predict a significantly greater facilitation in aggression following the observation of the violent film, when compared to the humorous film. This later result was not found. Again a number of possible explanations can be considered. The same argument used in defense of Berkowitz's formulation can be used by the Mueller and Donnerstein formulation. Unfortunately, so can the same refutation. Another line of reasoning can be invoked to account for the data. While Mueller and Donnerstein feel the content of the film is most important in determining the amount of attentional shift, they do not discount the importance of the

film's degree of interest. The content of the humorous film should have produced more attentional shift than the content of the violent film in angered subjects. However, it could be argued that the violent film may have been perceived as more interesting by angered subjects. If this was the case, attentional shift properties of the two films would then be counterbalanced and lead to the present results. This argument can also be refuted empirically. As reported in the results, the films did in fact contain different levels of interest. However, this self-report data indicates that it was the humorous film that was perceived as most interesting. This greater interest should have further contributed to its attentional shift capacities. It would appear that the hypothesized attentional shift properties of the film did not affect the results.

The arousal-excitation transfer model, on the other hand, received strong support. Tannenbaum and Zillmann (1975) state that any arousing film, regardless of its content, will facilitate the subject's dominant response. For angered subjects in such a situation, the dominant response is to aggress. The fact that the two arousing films, which seem to have had little in common except their arousal properties, facilitated aggression in angered subjects is uncompromising support for the theory. (In order to see the extent of this accuracy, one can visually compare Figure 1e and Figure 2).

Turning to the reward data, no such supportive evidence is found for either of the two applicable formulations. The results seem to indicate that neither the type of film nor method of treatment had any appreciable effect on subsequent reward behavior. Both the arousal-excitation transfer and the arousal-attentional shift formulation predict that positively

treated subjects would display more reward behavior than their neutrally treated counterparts. This result was not found. Both theories predict a further facilitation in positively treated subjects shown the arousing film. No such result was found. Finally the arousal-attentional shift formulation predicts the greatest display of reward behavior in positively treated subjects shown the humorous film. Again no such result was found. (While the arousal-excitation transfer formulation predicts this result, this correct prediction alone does not tend to support the position.)

Three theoretical and two methodological explanations for these results seem relevant. From a theoretical standpoint, one must wonder why ither theory would hold only for aggressive and not rewarding behavior. One explanation is that positively treated subjects don't have a dominant response. Although positively treated subjects report that they were treated well and felt good, such emotions may not lead to feeling of retribution in the same way that anger seems to lead to feelings of retaliation. If no such link exists for positively treated subjects, then it should be no surprise to find a lack of facilitation due to arousing films.

A second theoretical explanation concerns the misattribution process. The arousal produced by the films is said to be misattributed to one's prior affective state once cues associated with that state (i.e. the instigating confederate) are reintroduced. One might question whether this misattribution works the same in negatively and positively treated subjects. Anger is a strong emotion which might be able to gather momentum from other sources. The opposite of anger, labeled affection earlier in this manuscript, may not have similar power. In fact, Tannenbaum and Zillmann and therefore Mueller and Donnerstein assume that the original instigation

produces arousal and the film simply adds to it. While Zillmann and Johnson (1973) have shown that anger instigation (negative treatment) is in fact physiologically arousing, no one has demonstrated such an effect in positively treated subjects. If positive treatment is not arousing, then the misattribution process is missing a vital component.

A third theoretical concern addresses the nature of the response itself. In a tangentially related investigation, Piliavin and Piliavin (Note 4) have found that increasing arousal through the observational experience does not affect later emergency helping behavior. They propose that there is some unique characteristic in the helping response that prevents such a facilitation. This characteristic may be present in other prosocial behaviors. If so, the present results can then be explained.

Two methodological concerns might also have affected the findings. One problem seems to be concerned with possible "ceiling effects." Even the lowest cell mean reaches a reward intensity average of nearly 5 on a scale of 8 for each response. Such high levels might tend to obscure any effect due to the conditions of the situation. One argument seems not all together different from the one proposed by Buss (1961) concerning aggressive responses. If low shock intensities are not aggressive, are low rewards rewarding? The means, while all rather high, might be different if one looks only at "true" rewarding behavior. To this end the present data were reanalyzed using only reward intensities 6, 7, and 8. Again, however, no significant differences were found between conditions. This repeated lack of significant effects tends to bring into question the applicability of the "ceiling effects" argument.

A second and more compelling methodological concern warrants discussion. The present investigation showed no evidence that the positively treated subjects were in any way different than the neutrally treated ones. It will be recalled that in the experimental setting positively treated subjects had their essay evaluated in a positive manner. The neutrally treated subjects, on the other hand, received no evaluation whatsoever. It is reasonable to assume that subjects receiving a positive rating were only getting what they felt they deserved. The positive treatment might have seemed to the subjects as the only reasonable way for the confederate to act. If this was the case, these subjects might have experienced only "neutral" feelings toward the confederate. A simple way to examine this possibility would have been to ask all subjects how they felt toward the confederate. However, the present experiment put this question only to the positively and negatively treated subjects. Even without straight-forward evidence the results tend to suggest the present explanation. On both the aggressive and reward data neutrally and positively treated subjects acted in virtually an identical fashion. One related study found much the same pattern of results. Mueller, Nelson, and Donnerstein (Note 1) found that neutrally and positively treated subjects acted in identical ways on both subsequent aggression and helping responses.

The only other pertinent investigation is reported by Tannenbaum (1971). In this study the arousing film led to significantly more reward behavior than the nonarousing film in positively treated subjects only. This difference in the positively treated subjects when compared to the neutrally treated ones seems to indicate that the treatment manipulation was effective. However, a closer look at the results shows that the film

had a similar but not significant effect ($.10 > p > .05$) in the neutrally treated subjects. Only in the negatively treated subjects was the difference nonexistent. Although the results of this last study are different from those cited earlier, they again point to an inability to produce strong differences between the positively treated and neutrally treated groups. This problem is, of course, not encountered with negatively treated subjects.

In summary, the current investigation was intended to compare different viewpoints concerning media presentations on subsequent behavior in human adults. Most of the past research, and therefore much of the theorizing, has been concerned with aggressive or antisocial behavior. Different predictions were derived from four theoretical positions for the present investigation. The results indicate support for one of these positions, the arousal-excitation transfer formulation. Regardless of the films' content, negatively treated subjects shown an arousing film were more aggressive than similarly treated subjects shown a nonarousing film. None of the other formulations predict such an effect.

The results from the reward data fail to support either of the two applicable formulations. In fact, neither the type of film nor treatment had any discernible effect on subsequent rewarding behavior. Three theoretical and two methodological explanations were then discussed.

The overall results from this investigation are not completely compatible with all of the previous results. One must wonder why a violent and humorous film can elicit equal amounts of aggression while violence believed to be justified or unjustified produces different levels. One

must also wonder why prosocial behavior is affected by film induced arousal in one study but not in others.

In order to answer these and other questions, further research must be conducted. Below are a number of areas that seem both important and interesting to this author.

Future research concerned with the effects of media presentations on post-observational behavior can take a number of directions. One direction is to incorporate physiological measures of arousal into the design of the experiments. By utilizing relatively unobtrusive measures, an experimenter can continually monitor the subjects' arousal without interrupting the progression of the experiment.

Another direction of interest to the present author involves further exploration into the attentional shift formulation. To date the attentional shift hypothesis has been primarily used to account for data previously reported. It seems necessary to specify and display, rather than merely hypothesize, what contributes to the attentional shift properties of a presentation. One straight-forward way to investigate this is to differentially treat subjects, show them a film, and then simply ask them how distracting the film was. Another method is to test the subject's recall of events that occurred prior to the presentation of the film. Once studies of this type are performed, one can more clearly test the arousal-attentional shift formulation.

Future research might also systematically investigate differences between divergent populations. Earlier in this paper it was suggested that contrasting results from two similar studies (Hartmann, 1969; Geen & Berkowitz, 1967) might have been due to the differences in the populations

from which the samples were selected. Sex differences also deserve investigation. For example, self-report data from the present study showed that the female subjects found the humorous film more interesting than the violent film. One can only wonder whether the same results would have been found in male subjects.

While a multitude of research has investigated the effects of media violence on anti-social behavior, only this study and two others have looked at its effects on pro-social behavior. Moreover, Mueller, Nelson, and Donnerstein (Note 1) found a facilitative effect due to a violent presentation on subsequent helping behavior. If such a result is replicable, certainly a wide area of research and theorizing is open.

Finally, future research eventually must leave the confines of the laboratory with its convenient measures and manipulations. With the increased publicity such research has generated, the potential for misinterpretation and inevitably misapplication dramatically increases. For instance, if one were to argue for the removal of violence from media because of the Berkowitz results would one also now argue for the removal of humor? Couple this with the fact that subjects are becoming more and more suspicious about such manipulations in the psychology laboratory and the need for change becomes increasingly evident.

Regardless of the direction future research takes, it is clear that we have come a long way in investigating the effects of media presentations on subsequent behavior. Whether Tannenbaum and Zillmann's formulation will stand the test of time can only be determined by just such future research.

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APPENDIX A.

FILM RATING QUESTIONNAIRE

Please circle one number only.

I feel this excerpt from the video-tape was:

very sexual ... not at all sexual

1 2 3 4 5 6 7 8 9 10

not at all aggressive ... very aggressive

1 2 3 4 5 6 7 8 9 10

very humorous ... not at all humorous

1 2 3 4 5 6 7 8 9 10

not at all arousing ... very arousing

1 2 3 4 5 6 7 8 9 10

very exciting ... not at all exciting

1 2 3 4 5 6 7 8 9 10

After watching the video-tape I felt:

very amused ... not at all amused

1 2 3 4 5 6 7 8 9 10

not at all insulted ... very insulted

1 2 3 4 5 6 7 8 9 10

very aroused ... not at all aroused

1 2 3 4 5 6 7 8 9 10

APPENDIX B.

SUBJECT INFORMED CONSENT FORM

THE PRESENT STUDY IS CONCERNED WITH HOW INDIVIDUALS PERFORM VARIOUS TASKS UNDER DIFFERENT FORMS OF STRESS AND DISTRACTION. MOST OF YOU WILL TAKE A PERFORMANCE TASK IN WHICH THE STRESS WILL BE A FORM OF SHOCK. IN ADDITION, YOU WILL BE ASKED TO ASSIST IN THE EVALUATION OF ANOTHER SUBJECTS' TASK BY ADMINISTERING ELECTRIC SHOCK. THE SHOCKS ARE NOT HARMFUL. HOWEVER, IF FOR SOME REASON YOU DO NOT WISH TO PARTICIPATE IN THIS STUDY, SO INFORM THE EXPERIMENTAL ASSISTANT AND YOU WILL BE GIVEN YOUR FULL CREDIT. ALSO, ANYTIME DURING THE STUDY THAT YOU WISH TO STOP PARTICIPATING JUST INFORM THE ASSISTANT AND YOU WILL BE GIVEN YOUR CREDIT. MY NAME BELOW INDICATES THAT I FULLY UNDERSTAND MY ROLE AND OPTIONS IN THIS STUDY.

NAME _____

DATE _____

APPENDIX C.

WRITTEN INSTIGATION MANIPULATION

EVALUATION OF ESSAY WRITTEN BY OTHER SUBJECT

HOW WOULD YOU RATE THE ESSAY

GOOD _____ _____ _____ _____ _____ BAD

CREATIVE _____ _____ _____ _____ _____ NOT AT ALL CREATIVE

HOW WOULD YOU RATE THE INDIVIDUAL WHO WROTE THE ESSAY

INTELLIGENT _____ _____ _____ _____ _____ NOT VERY INTELLIGENT

KNOWLEDGEABLE _____ _____ _____ _____ _____ NOT AWARE OF SUBJECT MATTER

HOW MUCH MONEY HAVE YOU DECIDED THE SUBJECT HAS EARNED

	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
$	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

APPENDIX D.

SUBJECT RATING FORM

HOW DID THE OTHER SUBJECT RATE YOUR ESSAY

GOOD _____ _____ _____ _____ _____ BAD

HOW DID YOU FEEL AFTER RECEIVING THIS RATING

GOOD _____ _____ _____ _____ _____ BAD

ANGRY _____ _____ _____ _____ _____ NOT ANGRY

HOW WOULD YOU RATE THE VIDEOTAPE WHICH WAS PLAYED FOR YOU

INTERESTING _____ _____ _____ _____ _____ NOT INTERESTING

HUMOROUS _____ _____ _____ _____ _____ NOT HUMOROUS

AGGRESSIVE _____ _____ _____ _____ _____ NOT AGGRESSIVE

APPENDIX E.

ANALYSIS OF VARIANCE TABLE FOR AGGRESSION DATA

Sources	df	MS	f
Treatment	2	879.500	3.731*
Film	2	274.667	1.165
Treatment x film	4	258.917	1.098
Residual	63	235.712	

*$p < .03$.

APPENDIX F.

ANALYSIS OF VARIANCE TABLE FOR REWARD DATA

Sources	df	MS	f
Treatment	2	1822.097	4.365*
Film	2	136.763	0.328
Treatment x film	4	182.638	0.438
Residual	63	417.387	

*$p < .02$.